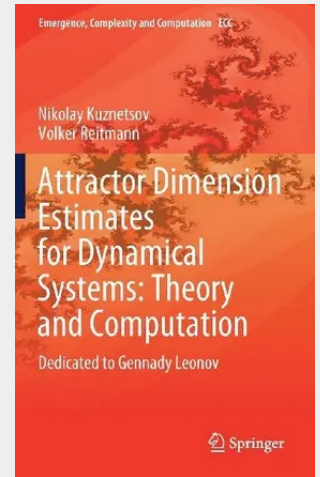


Attractor Dimension Estimates for Dynamical Systems: Theory and Computation

Dedicated to Gennady Leonov

This book provides analytical and numerical methods for the estimation of dimension characteristics (Hausdorff, Fractal, Carathéodory dimensions) for attractors and invariant sets of dynamical systems and cocycles generated by smooth differential equations or maps in finite-dimensional Euclidean spaces or on manifolds. It also discusses stability investigations using estimates based on Lyapunov functions and adapted metrics. Moreover, it introduces various types of Lyapunov dimensions of dynamical systems with respect to an invariant set, based on local, global and uniform Lyapunov exponents, and derives analytical formulas for the Lyapunov dimension of the attractors of the Hénon and Lorenz systems. Lastly, the book presents estimates of the topological entropy for general dynamical systems in metric spaces and estimates of the topological dimension for orbit closures of almost periodic solutions to differential equations.

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